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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/512,978	02/24/2000	Robert Kerr	MI22-1343	5932

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EXAMINER

CAO, PHAT X

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 02/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/512,978

Applicant(s)

Kerr et al.

Examiner

Phat X. Cao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Dec 3, 2001
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 50 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1-8 and 50 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- in claims 1 and 5, a phrase “the conductive line not being a gate electrode” is not supported by the original disclosure.

- claims 2-4, 6-7 and 50 are also rejected because they directly or indirectly depend on claims 1 and 5.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mano (US. 5,814,886) in view of Wolf (Vol. 3).

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Mano discloses in Fig. 3 an integrated circuit comprising: a conductive line G2 received over a semiconductive substrate; a diffusion region within the substrate proximate the line and disposed directly under conductive portions of the conductive line G2; and a conductive material C1 made of metal received over the line and interconnecting it with the diffusion region.

Mano does not specifically disclose that the diffusion region and substrate forming a reverse biased pn junction for selected magnitudes of current provided through the conductive line.

However, Wolf teaches the obviousness of using n and p dopants in four different MOSFETs configurations, formation of pn junction and reverse biasing a pn junction of the diffusion region and the substrate by selectively apply magnitudes of voltage provided through the conductive gate line of MOSFET (see Fig. 4-2 on page 137 and related text, on page 136, section 4.1.1). Accordingly, it would have been obvious to form a reverse biased pn junction between the diffusion region and the substrate for selected magnitudes of voltage on current provided through the conductive gate line because according to Wolf, this is a basis operation of a MOS transistor when the transistor is in OFF mode (also see Fig. 4-2 and section 4.1.1). It is also noted that using the conductive gate line structure of Mano as “the conductive line not being a gate electrode” as claimed would have been obvious because it is an intended use.

4. Claims 1-8 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over En et al (US. 5,990,524) in view of Wolf (Vol. 3).

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En et al disclose in Fig. 4 an integrated circuit comprising: a conductive line 16 received over a semiconductor substrate 12; a diffusion region 24b within the substrate proximate the line and disposed directly under conductive portions of the conductive line 16; and a conductive material 50 made of metal received over the line 16 and interconnecting it with the diffusion region 24b.

En et al does not specifically disclose that the diffusion region and the substrate forming a reversed biased pn junction for selected magnitudes of current provided through the conductive line.

However, Wolf teaches the obviousness of using n and p dopants in four different MOSFETs configurations, formation of pn junction and reverse biasing a pn junction of the diffusion region and the substrate by selectively apply magnitudes of voltage provided through the conductive gate line of MOSFET (see Fig. 4-2 on page 137 and related text, on page 136, section 4.1.1). Accordingly, it would have been obvious to form a reverse biased pn junction between the diffusion region and the substrate for selected magnitudes of voltage on current provided through the conductive gate line because according to Wolf, this is a basis operation of a MOS transistor when the transistor is in OFF mode (also see Fig. 4-2 and section 4.1.1). It is also noted that using the conductive gate line structure of En et al as “the conductive line not being a gate electrode” as claimed would have been obvious because it is an intended use.

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Response to Arguments

5. Applicant's arguments filed 12/3/01 have been fully considered but they are not persuasive.

Applicant argues that none of the applied references disclose “the conductive line not being a gate electrode” as amended. However, this is a new matter because it is not supported by the original disclosure. In contrast, Applicant’s Figs. 1-4 clearly disclose the gate electrode structure. Specifically, on page 4, lines 19-20 of the specification, Applicant discloses “[A] plurality of conductive lines 28...include a gate oxide layer 29” [emphasis added], and on page 5, lines 1-3 of the specification, Applicant discloses “dynamic random access memory (DRAM)...with conductive lines 28 comprising individual word lines [or gate lines].” [emphasis added]. On the other hand, the conductive line of the claimed invention would not distinguish over the conductive gate line structure of Mano or En because using the conductive gate line structure as “the conductive line not being a gate electrode” is an intended use.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period


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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is (703) 308-4917. The Examiner can normally be reached on Monday through Thursday. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. Group 2800 fax number is (703) 308-7722 or (703) 308-7724.

PC
February 24, 2002


PHAT X. CAO
PRIMARY EXAMINER